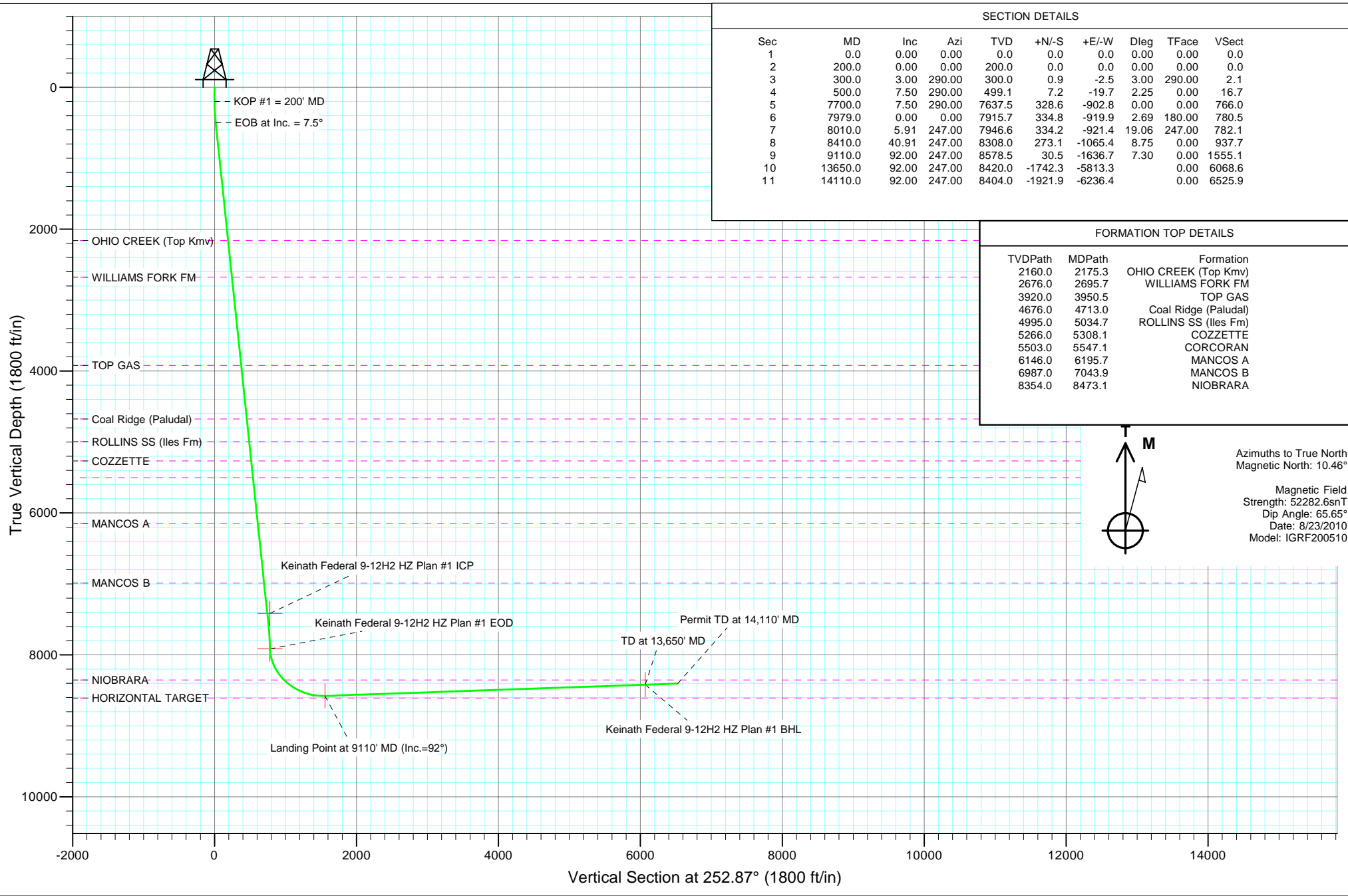




Project: Orchard  
 Site: NENW Sec10-T8S-R96W (C10OU)  
 Well: Keinath Federal 9-12H2  
 Wellbore: HZ  
 Design: Plan #1



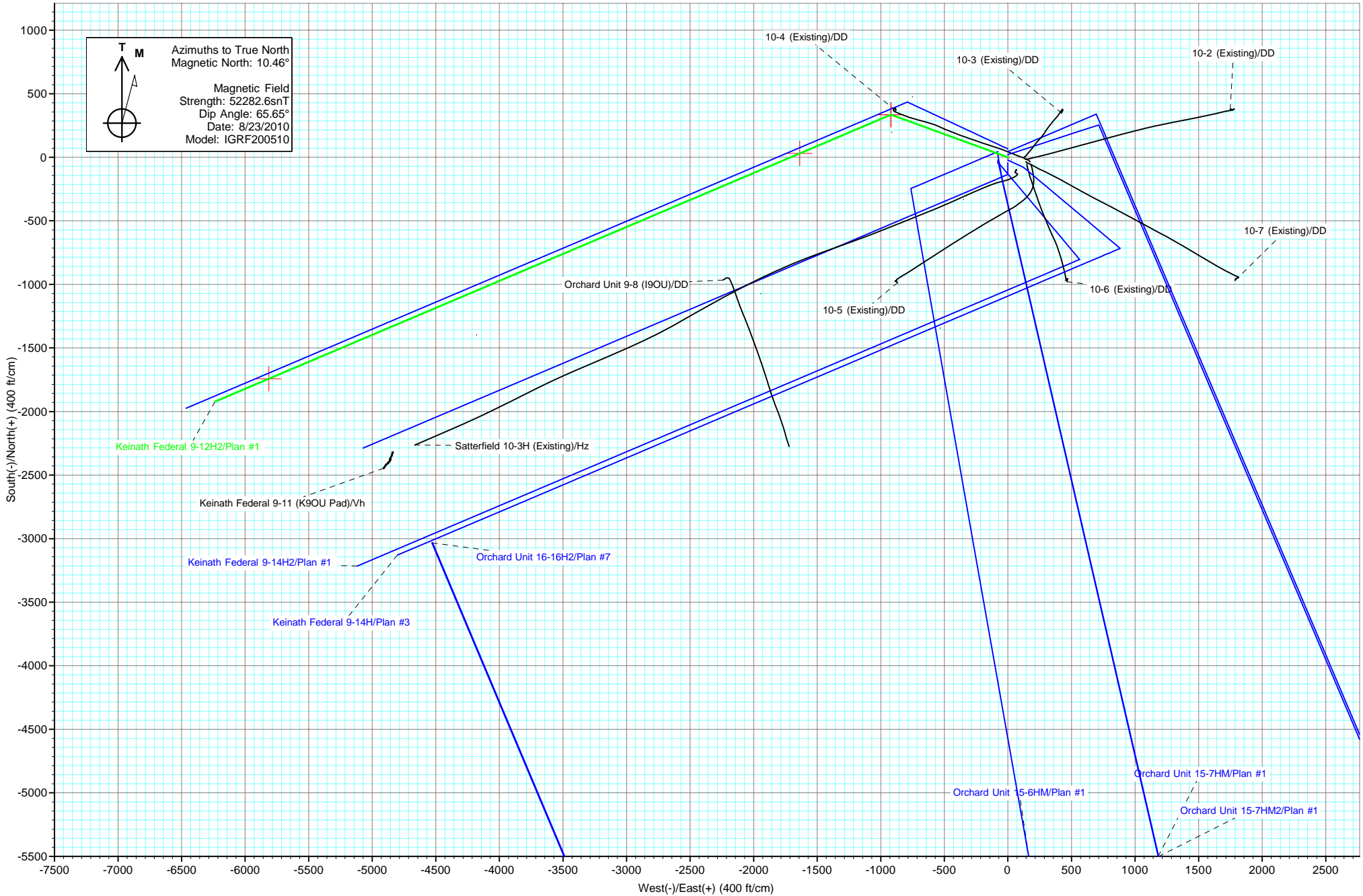
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0
3	300.0	3.00	290.00	300.0	0.9	-2.5	3.00	290.00	2.1
4	500.0	7.50	290.00	499.1	7.2	-19.7	2.25	0.00	16.7
5	7700.0	7.50	290.00	7637.5	328.6	-902.8	0.00	0.00	766.0
6	7979.0	0.00	0.00	7915.7	334.8	-919.9	2.69	180.00	780.5
7	8010.0	5.91	247.00	7946.6	334.2	-921.4	19.06	247.00	782.1
8	8410.0	40.91	247.00	8308.0	273.1	-1065.4	8.75	0.00	937.7
9	9110.0	92.00	247.00	8578.5	30.5	-1636.7	7.30	0.00	1555.1
10	13650.0	92.00	247.00	8420.0	-1742.3	-5813.3		0.00	6068.6
11	14110.0	92.00	247.00	8404.0	-1921.9	-6236.4		0.00	6525.9

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
2160.0	2175.3	OHIO CREEK (Top Kmv)
2676.0	2695.7	WILLIAMS FORK FM
3920.0	3950.5	TOP GAS
4676.0	4713.0	Coal Ridge (Paludal)
4995.0	5034.7	ROLLINS SS (Iles Fm)
5266.0	5308.1	COZZETTE
5503.0	5547.1	CORCORAN
6146.0	6195.7	MANCOS A
6987.0	7043.9	MANCOS B
8354.0	8473.1	NIOBRARA

Azimuths to True North  
 Magnetic North: 10.46°  
 Magnetic Field  
 Strength: 52282.6snT  
 Dip Angle: 65.65°  
 Date: 8/23/2010  
 Model: IGRF200510



Project: Orchard  
Site: NENW Sec10-T8S-R96W (C10OU)  
Well: Keinath Federal 9-12H2  
Wellbore: HZ  
Plan: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b> EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b> Well Keinath Federal 9-12H2
<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b> KBE @ 5590.0ft (Original Well Elev)
<b>Project:</b> Orchard	<b>MD Reference:</b> KBE @ 5590.0ft (Original Well Elev)
<b>Site:</b> NENW Sec10-T8S-R96W (C10OU)	<b>North Reference:</b> True
<b>Well:</b> Keinath Federal 9-12H2	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Wellbore:</b> HZ	
<b>Design:</b> Plan #1	

<b>Project</b> Orchard		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b> Mean Sea Level	
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> Colorado Central Zone		

<b>Site</b> NENW Sec10-T8S-R96W (C10OU)					
<b>Site Position:</b>		<b>Northing:</b>	1,569,581.56 ft	<b>Latitude:</b>	39.368394
<b>From:</b> Lat/Long		<b>Easting:</b>	2,265,333.69 ft	<b>Longitude:</b>	-108.099008
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-1.64 °

<b>Well</b> Keinath Federal 9-12H2					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,569,683.41 ft	<b>Latitude:</b> 39.368669
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,265,270.52 ft	<b>Longitude:</b> -108.099242
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b> 5,568.0 ft

<b>Wellbore</b> HZ					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF200510	8/23/2010	(°) 10.46	(°) 65.65	(nT) 52,283

<b>Design</b> Plan #1				
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	252.87

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	3.00	290.00	300.0	0.9	-2.5	3.00	3.00	0.00	290.00	
500.0	7.50	290.00	499.1	7.2	-19.7	2.25	2.25	0.00	0.00	
7,700.0	7.50	290.00	7,637.5	328.6	-902.8	0.00	0.00	0.00	0.00	
7,979.0	0.00	0.00	7,915.7	334.8	-919.9	2.69	-2.69	0.00	180.00	
8,010.0	5.91	247.00	7,946.6	334.2	-921.4	19.06	19.06	0.00	247.00	
8,410.0	40.91	247.00	8,308.0	273.1	-1,065.4	8.75	8.75	0.00	0.00	
9,110.0	92.00	247.00	8,578.5	30.5	-1,636.7	7.30	7.30	0.00	0.00	
13,650.0	92.00	247.00	8,420.0	-1,742.3	-5,813.3	0.00	0.00	0.00	0.00	
14,110.0	92.00	247.00	8,404.0	-1,921.9	-6,236.4	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Keinath Federal 9-12H2
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Project:</b>	Orchard	<b>MD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Site:</b>	NENW Sec10-T8S-R96W (C10OU)	<b>North Reference:</b>	True
<b>Well:</b>	Keinath Federal 9-12H2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP #1 = 200' MD
300.0	3.00	290.00	300.0	0.9	-2.5	2.1	3.00	3.00	
400.0	5.25	290.00	399.7	3.4	-9.2	7.8	2.25	2.25	
500.0	7.50	290.00	499.1	7.2	-19.7	16.7	2.25	2.25	EOB at Inc. = 7.5°
600.0	7.50	290.00	598.2	11.6	-31.9	27.1	0.00	0.00	
700.0	7.50	290.00	697.4	16.1	-44.2	37.5	0.00	0.00	
800.0	7.50	290.00	796.5	20.5	-56.4	47.9	0.00	0.00	
900.0	7.50	290.00	895.6	25.0	-68.7	58.3	0.00	0.00	
1,000.0	7.50	290.00	994.8	29.5	-81.0	68.7	0.00	0.00	
1,100.0	7.50	290.00	1,093.9	33.9	-93.2	79.1	0.00	0.00	
1,200.0	7.50	290.00	1,193.1	38.4	-105.5	89.5	0.00	0.00	
1,300.0	7.50	290.00	1,292.2	42.9	-117.8	99.9	0.00	0.00	
1,400.0	7.50	290.00	1,391.4	47.3	-130.0	110.3	0.00	0.00	
1,500.0	7.50	290.00	1,490.5	51.8	-142.3	120.7	0.00	0.00	
1,600.0	7.50	290.00	1,589.7	56.3	-154.6	131.1	0.00	0.00	
1,700.0	7.50	290.00	1,688.8	60.7	-166.8	141.6	0.00	0.00	
1,800.0	7.50	290.00	1,787.9	65.2	-179.1	152.0	0.00	0.00	
1,900.0	7.50	290.00	1,887.1	69.7	-191.4	162.4	0.00	0.00	
2,000.0	7.50	290.00	1,986.2	74.1	-203.6	172.8	0.00	0.00	
2,100.0	7.50	290.00	2,085.4	78.6	-215.9	183.2	0.00	0.00	
2,175.3	7.50	290.00	2,160.0	81.9	-225.1	191.0	0.00	0.00	OHIO CREEK (Top Kmv)
2,200.0	7.50	290.00	2,184.5	83.0	-228.2	193.6	0.00	0.00	
2,300.0	7.50	290.00	2,283.7	87.5	-240.4	204.0	0.00	0.00	
2,400.0	7.50	290.00	2,382.8	92.0	-252.7	214.4	0.00	0.00	
2,500.0	7.50	290.00	2,482.0	96.4	-265.0	224.8	0.00	0.00	
2,600.0	7.50	290.00	2,581.1	100.9	-277.2	235.2	0.00	0.00	
2,695.7	7.50	290.00	2,676.0	105.2	-289.0	245.2	0.00	0.00	WILLIAMS FORK FM
2,700.0	7.50	290.00	2,680.2	105.4	-289.5	245.6	0.00	0.00	
2,800.0	7.50	290.00	2,779.4	109.8	-301.8	256.0	0.00	0.00	
2,900.0	7.50	290.00	2,878.5	114.3	-314.0	266.4	0.00	0.00	
3,000.0	7.50	290.00	2,977.7	118.8	-326.3	276.8	0.00	0.00	
3,100.0	7.50	290.00	3,076.8	123.2	-338.6	287.2	0.00	0.00	
3,200.0	7.50	290.00	3,176.0	127.7	-350.8	297.7	0.00	0.00	
3,300.0	7.50	290.00	3,275.1	132.2	-363.1	308.1	0.00	0.00	
3,400.0	7.50	290.00	3,374.3	136.6	-375.3	318.5	0.00	0.00	
3,500.0	7.50	290.00	3,473.4	141.1	-387.6	328.9	0.00	0.00	
3,600.0	7.50	290.00	3,572.5	145.5	-399.9	339.3	0.00	0.00	
3,700.0	7.50	290.00	3,671.7	150.0	-412.1	349.7	0.00	0.00	
3,800.0	7.50	290.00	3,770.8	154.5	-424.4	360.1	0.00	0.00	
3,900.0	7.50	290.00	3,870.0	158.9	-436.7	370.5	0.00	0.00	
3,950.5	7.50	290.00	3,920.0	161.2	-442.9	375.8	0.00	0.00	TOP GAS
4,000.0	7.50	290.00	3,969.1	163.4	-448.9	380.9	0.00	0.00	
4,100.0	7.50	290.00	4,068.3	167.9	-461.2	391.3	0.00	0.00	
4,200.0	7.50	290.00	4,167.4	172.3	-473.5	401.7	0.00	0.00	
4,300.0	7.50	290.00	4,266.6	176.8	-485.7	412.1	0.00	0.00	
4,400.0	7.50	290.00	4,365.7	181.3	-498.0	422.5	0.00	0.00	
4,500.0	7.50	290.00	4,464.8	185.7	-510.3	432.9	0.00	0.00	
4,600.0	7.50	290.00	4,564.0	190.2	-522.5	443.3	0.00	0.00	
4,700.0	7.50	290.00	4,663.1	194.7	-534.8	453.8	0.00	0.00	
4,713.0	7.50	290.00	4,676.0	195.2	-536.4	455.1	0.00	0.00	Coal Ridge (Paludal)

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Keinath Federal 9-12H2
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Project:</b>	Orchard	<b>MD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Site:</b>	NENW Sec10-T8S-R96W (C10OU)	<b>North Reference:</b>	True
<b>Well:</b>	Keinath Federal 9-12H2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,800.0	7.50	290.00	4,762.3	199.1	-547.1	464.2	0.00	0.00	
4,900.0	7.50	290.00	4,861.4	203.6	-559.3	474.6	0.00	0.00	
5,000.0	7.50	290.00	4,960.6	208.0	-571.6	485.0	0.00	0.00	
5,034.7	7.50	290.00	4,995.0	209.6	-575.9	488.6	0.00	0.00	ROLLINS SS (Iles Fm)
5,100.0	7.50	290.00	5,059.7	212.5	-583.9	495.4	0.00	0.00	
5,200.0	7.50	290.00	5,158.9	217.0	-596.1	505.8	0.00	0.00	
5,300.0	7.50	290.00	5,258.0	221.4	-608.4	516.2	0.00	0.00	
5,308.1	7.50	290.00	5,266.0	221.8	-609.4	517.0	0.00	0.00	COZZETTE
5,400.0	7.50	290.00	5,357.1	225.9	-620.7	526.6	0.00	0.00	
5,500.0	7.50	290.00	5,456.3	230.4	-632.9	537.0	0.00	0.00	
5,547.1	7.50	290.00	5,503.0	232.5	-638.7	541.9	0.00	0.00	CORCORAN
5,600.0	7.50	290.00	5,555.4	234.8	-645.2	547.4	0.00	0.00	
5,700.0	7.50	290.00	5,654.6	239.3	-657.5	557.8	0.00	0.00	
5,800.0	7.50	290.00	5,753.7	243.8	-669.7	568.2	0.00	0.00	
5,900.0	7.50	290.00	5,852.9	248.2	-682.0	578.6	0.00	0.00	
6,000.0	7.50	290.00	5,952.0	252.7	-694.3	589.0	0.00	0.00	
6,100.0	7.50	290.00	6,051.2	257.2	-706.5	599.4	0.00	0.00	
6,195.7	7.50	290.00	6,146.0	261.4	-718.3	609.4	0.00	0.00	MANCOS A
6,200.0	7.50	290.00	6,150.3	261.6	-718.8	609.9	0.00	0.00	
6,300.0	7.50	290.00	6,249.4	266.1	-731.0	620.3	0.00	0.00	
6,400.0	7.50	290.00	6,348.6	270.5	-743.3	630.7	0.00	0.00	
6,500.0	7.50	290.00	6,447.7	275.0	-755.6	641.1	0.00	0.00	
6,600.0	7.50	290.00	6,546.9	279.5	-767.8	651.5	0.00	0.00	
6,700.0	7.50	290.00	6,646.0	283.9	-780.1	661.9	0.00	0.00	
6,800.0	7.50	290.00	6,745.2	288.4	-792.4	672.3	0.00	0.00	
6,900.0	7.50	290.00	6,844.3	292.9	-804.6	682.7	0.00	0.00	
7,000.0	7.50	290.00	6,943.5	297.3	-816.9	693.1	0.00	0.00	
7,043.9	7.50	290.00	6,987.0	299.3	-822.3	697.7	0.00	0.00	MANCOS B
7,100.0	7.50	290.00	7,042.6	301.8	-829.2	703.5	0.00	0.00	
7,200.0	7.50	290.00	7,141.7	306.3	-841.4	713.9	0.00	0.00	
7,300.0	7.50	290.00	7,240.9	310.7	-853.7	724.3	0.00	0.00	
7,400.0	7.50	290.00	7,340.0	315.2	-866.0	734.7	0.00	0.00	
7,482.5	7.50	290.00	7,421.8	318.9	-876.1	743.3	0.00	0.00	Keinath Federal 9-12H2 HZ Plan #1 ICP
7,500.0	7.50	290.00	7,439.2	319.7	-878.2	745.1	0.00	0.00	
7,600.0	7.50	290.00	7,538.3	324.1	-890.5	755.5	0.00	0.00	
7,700.0	7.50	290.00	7,637.5	328.6	-902.8	766.0	0.00	0.00	Start Drop -2.69
7,800.0	4.81	290.00	7,736.9	332.2	-912.8	774.5	2.69	-2.69	
7,900.0	2.12	290.00	7,836.7	334.3	-918.5	779.3	2.69	-2.69	
7,979.0	0.00	0.00	7,915.7	334.8	-919.9	780.5	2.69	-2.69	EOD at Inc. = 0° - Keinath Federal 9-12H2 HZ F
8,000.0	4.00	247.00	7,936.7	334.5	-920.6	781.2	19.06	19.06	
8,010.0	5.91	247.00	7,946.6	334.2	-921.4	782.1	19.06	19.06	
8,100.0	13.78	247.00	8,035.2	328.2	-935.5	797.4	8.75	8.75	
8,200.0	22.53	247.00	8,130.1	316.0	-964.2	828.4	8.75	8.75	
8,300.0	31.28	247.00	8,219.2	298.3	-1,005.8	873.3	8.75	8.75	
8,400.0	40.03	247.00	8,300.4	275.6	-1,059.4	931.3	8.75	8.75	
8,410.0	40.91	247.00	8,308.0	273.1	-1,065.4	937.7	8.75	8.75	
8,473.1	45.52	247.00	8,354.0	256.2	-1,105.2	980.7	7.30	7.30	NIOBRARA
8,500.0	47.48	247.00	8,372.5	248.6	-1,123.1	1,000.1	7.30	7.30	
8,600.0	54.78	247.00	8,435.2	218.2	-1,194.7	1,077.5	7.30	7.30	
8,700.0	62.08	247.00	8,487.5	184.9	-1,273.1	1,162.2	7.30	7.30	
8,800.0	69.37	247.00	8,528.6	149.3	-1,357.0	1,252.8	7.30	7.30	
8,900.0	76.67	247.00	8,557.8	111.9	-1,444.9	1,347.9	7.30	7.30	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Keinath Federal 9-12H2
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Project:</b>	Orchard	<b>MD Reference:</b>	KBE @ 5590.0ft (Original Well Elev)
<b>Site:</b>	NENW Sec10-T8S-R96W (C10OU)	<b>North Reference:</b>	True
<b>Well:</b>	Keinath Federal 9-12H2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,000.0	83.97	247.00	8,574.6	73.5	-1,535.6	1,445.9	7.30	7.30	
9,100.0	91.27	247.00	8,578.8	34.4	-1,627.5	1,545.2	7.30	7.30	
9,110.0	92.00	247.00	8,578.5	30.5	-1,636.7	1,555.1	7.30	7.30	Landing Point at 9110' MD - Keinath Federal 9-
9,200.0	92.00	247.00	8,575.3	-4.6	-1,719.5	1,644.6	0.00	0.00	
9,300.0	92.00	247.00	8,571.8	-43.7	-1,811.5	1,744.0	0.00	0.00	
9,400.0	92.00	247.00	8,568.3	-82.7	-1,903.5	1,843.4	0.00	0.00	
9,500.0	92.00	247.00	8,564.9	-121.8	-1,995.5	1,942.9	0.00	0.00	
9,600.0	92.00	247.00	8,561.4	-160.8	-2,087.5	2,042.3	0.00	0.00	
9,700.0	92.00	247.00	8,557.9	-199.9	-2,179.5	2,141.7	0.00	0.00	
9,800.0	92.00	247.00	8,554.4	-238.9	-2,271.5	2,241.1	0.00	0.00	
9,900.0	92.00	247.00	8,550.9	-277.9	-2,363.5	2,340.5	0.00	0.00	
10,000.0	92.00	247.00	8,547.4	-317.0	-2,455.5	2,439.9	0.00	0.00	
10,100.0	92.00	247.00	8,543.9	-356.0	-2,547.5	2,539.3	0.00	0.00	
10,200.0	92.00	247.00	8,540.4	-395.1	-2,639.5	2,638.8	0.00	0.00	
10,300.0	92.00	247.00	8,536.9	-434.1	-2,731.5	2,738.2	0.00	0.00	
10,400.0	92.00	247.00	8,533.4	-473.2	-2,823.5	2,837.6	0.00	0.00	
10,500.0	92.00	247.00	8,530.0	-512.2	-2,915.4	2,937.0	0.00	0.00	
10,600.0	92.00	247.00	8,526.5	-551.3	-3,007.4	3,036.4	0.00	0.00	
10,700.0	92.00	247.00	8,523.0	-590.3	-3,099.4	3,135.8	0.00	0.00	
10,800.0	92.00	247.00	8,519.5	-629.4	-3,191.4	3,235.3	0.00	0.00	
10,900.0	92.00	247.00	8,516.0	-668.4	-3,283.4	3,334.7	0.00	0.00	
11,000.0	92.00	247.00	8,512.5	-707.5	-3,375.4	3,434.1	0.00	0.00	
11,100.0	92.00	247.00	8,509.0	-746.5	-3,467.4	3,533.5	0.00	0.00	
11,200.0	92.00	247.00	8,505.5	-785.6	-3,559.4	3,632.9	0.00	0.00	
11,300.0	92.00	247.00	8,502.0	-824.6	-3,651.4	3,732.3	0.00	0.00	
11,400.0	92.00	247.00	8,498.5	-863.7	-3,743.4	3,831.7	0.00	0.00	
11,500.0	92.00	247.00	8,495.1	-902.7	-3,835.4	3,931.2	0.00	0.00	
11,600.0	92.00	247.00	8,491.6	-941.8	-3,927.4	4,030.6	0.00	0.00	
11,700.0	92.00	247.00	8,488.1	-980.8	-4,019.4	4,130.0	0.00	0.00	
11,800.0	92.00	247.00	8,484.6	-1,019.9	-4,111.4	4,229.4	0.00	0.00	
11,900.0	92.00	247.00	8,481.1	-1,058.9	-4,203.4	4,328.8	0.00	0.00	
12,000.0	92.00	247.00	8,477.6	-1,098.0	-4,295.4	4,428.2	0.00	0.00	
12,100.0	92.00	247.00	8,474.1	-1,137.0	-4,387.4	4,527.6	0.00	0.00	
12,200.0	92.00	247.00	8,470.6	-1,176.1	-4,479.4	4,627.1	0.00	0.00	
12,300.0	92.00	247.00	8,467.1	-1,215.1	-4,571.3	4,726.5	0.00	0.00	
12,400.0	92.00	247.00	8,463.6	-1,254.2	-4,663.3	4,825.9	0.00	0.00	
12,500.0	92.00	247.00	8,460.2	-1,293.2	-4,755.3	4,925.3	0.00	0.00	
12,600.0	92.00	247.00	8,456.7	-1,332.3	-4,847.3	5,024.7	0.00	0.00	
12,700.0	92.00	247.00	8,453.2	-1,371.3	-4,939.3	5,124.1	0.00	0.00	
12,800.0	92.00	247.00	8,449.7	-1,410.4	-5,031.3	5,223.5	0.00	0.00	
12,900.0	92.00	247.00	8,446.2	-1,449.4	-5,123.3	5,323.0	0.00	0.00	
13,000.0	92.00	247.00	8,442.7	-1,488.5	-5,215.3	5,422.4	0.00	0.00	
13,100.0	92.00	247.00	8,439.2	-1,527.5	-5,307.3	5,521.8	0.00	0.00	
13,200.0	92.00	247.00	8,435.7	-1,566.6	-5,399.3	5,621.2	0.00	0.00	
13,300.0	92.00	247.00	8,432.2	-1,605.6	-5,491.3	5,720.6	0.00	0.00	
13,400.0	92.00	247.00	8,428.7	-1,644.7	-5,583.3	5,820.0	0.00	0.00	
13,500.0	92.00	247.00	8,425.3	-1,683.7	-5,675.3	5,919.4	0.00	0.00	
13,600.0	92.00	247.00	8,421.8	-1,722.8	-5,767.3	6,018.9	0.00	0.00	
13,650.0	92.00	247.00	8,420.0	-1,742.3	-5,813.3	6,068.6	0.00	0.00	TD at 13,650' MD - Keinath Federal 9-12H2 HZ
13,700.0	92.00	247.00	8,418.3	-1,761.8	-5,859.3	6,118.3	0.00	0.00	
13,800.0	92.00	247.00	8,414.8	-1,800.9	-5,951.3	6,217.7	0.00	0.00	
13,900.0	92.00	247.00	8,411.3	-1,839.9	-6,043.3	6,317.1	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b> EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b> Well Keinath Federal 9-12H2
<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b> KBE @ 5590.0ft (Original Well Elev)
<b>Project:</b> Orchard	<b>MD Reference:</b> KBE @ 5590.0ft (Original Well Elev)
<b>Site:</b> NENW Sec10-T8S-R96W (C10OU)	<b>North Reference:</b> True
<b>Well:</b> Keinath Federal 9-12H2	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Wellbore:</b> HZ	
<b>Design:</b> Plan #1	

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
14,000.0	92.00	247.00	8,407.8	-1,879.0	-6,135.3	6,416.5	0.00	0.00	
14,100.0	92.00	247.00	8,404.3	-1,918.0	-6,227.2	6,515.9	0.00	0.00	
14,110.0	92.00	247.00	8,404.0	-1,921.9	-6,236.4	6,525.9	0.00	0.00	Permit TD at 14,110' MD

### Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Keinath Federal 9-12H2 - plan hits target center - Point	0.00	0.00	8,420.0	-1,742.3	-5,813.3	1,568,108.12	2,259,409.78	39.363884	-108.119803
Keinath Federal 9-12H2 - plan hits target center - Point	0.00	0.00	7,915.7	334.8	-919.9	1,570,044.40	2,264,360.58	39.369588	-108.102496
Keinath Federal 9-12H2 - plan hits target center - Point	0.00	0.00	8,578.5	30.5	-1,636.7	1,569,760.76	2,263,635.34	39.368753	-108.105031
Keinath Federal 9-12H2 - plan misses target center by 47.0ft at 7482.5ft MD (7421.8 TVD, 318.9 N, -876.1 E) - Point	0.00	0.00	7,415.7	334.8	-919.9	1,570,044.40	2,264,360.58	39.369588	-108.102496

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,175.3	2,160.0	OHIO CREEK (Top Kmv)			
2,695.7	2,676.0	WILLIAMS FORK FM			
3,950.5	3,920.0	TOP GAS			
4,713.0	4,676.0	Coal Ridge (Paludal)			
5,034.7	4,995.0	ROLLINS SS (Iles Fm)			
5,308.1	5,266.0	COZZETTE			
5,547.1	5,503.0	CORCORAN			
6,195.7	6,146.0	MANCOS A			
7,043.9	6,987.0	MANCOS B			
8,473.1	8,354.0	NIOBRARA			

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1 = 200' MD
500.0	499.1	0.9	-2.5	EOB at Inc. = 7.5°
7,700.0	7,637.5	7.2	-19.7	Start Drop -2.69
7,979.0	7,915.7	328.6	-902.8	EOD at Inc. = 0°
9,110.0	8,578.5	334.8	-919.9	Landing Point at 9110' MD
13,650.0	8,420.0	334.2	-921.4	TD at 13,650' MD
14,110.0	8,404.0	273.1	-1,065.4	Permit TD at 14,110' MD